

From the INTERNATIONAL BUREAU

PCTNOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

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Date of mailing(<i>day/month/year</i>) 19 December 2002 (19.12.02)		IMPORTANT NOTICE	
Applicant's or agent's file reference P651312WO			
International application No. PCT/GB01/002555	International filing date(<i>day/month/year</i>) 12 June 2001 (12.06.01)	Priority date(<i>day/month/year</i>)	
Applicant JEORY, James, et al			

1. Notice is hereby given that the International Bureau has **communicated**, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this notice:

KP, KR, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EE, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OA, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this notice is a copy of the international application as published by the International Bureau on 19 December 2002 (19.12.02) under No. WO 02/101155.

4. **TIME LIMITS for filing a demand for international preliminary examination and for entry into the national phase**

The applicable time limit for entering the national phase will, **subject to what is said in the following paragraph**, be **30 MONTHS** from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of **19 months** from the priority date, but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see *PCT Gazette* No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the *PCT Newsletter*, October and November 2001 and February 2002 issues.

In practice, **time limits other than the 30-month time limit** will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For **regular updates on the applicable time limits** (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

For filing a **demand for international preliminary examination**, see the *PCT Applicant's Guide*, Volume I/A, Chapter IX. Only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

It is the applicant's sole responsibility to monitor all these time limits.

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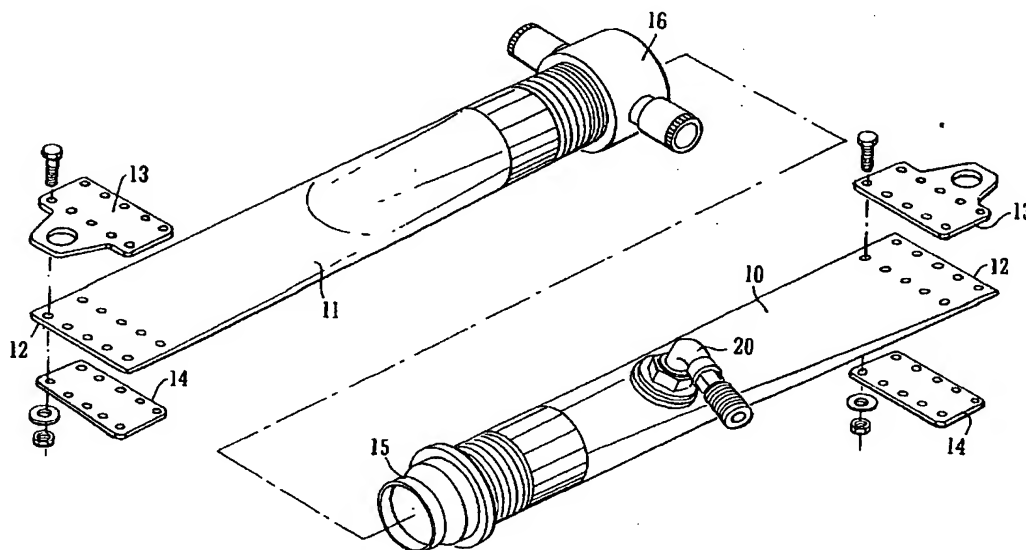
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[Continued on next page]

(54) Title: **AN INFLATABLE HOSE SYSTEM**



(57) Abstract: An inflatable hose system which may act as a boom for rescue purposes or for controlling the flow of surface borne contaminants of rivers, lakes and seas and comprising first and second hose lengths (10, 11) each having one end (12) flattened and sealed to be chiselshaped and the other end provided with a coupling (15, 16). The two lengths (10, 11) and any interposing standard hose lengths may thus be coupled together and inflated to a pressure in the range of 2 to 3.5 bar to provide a boom of the required length, and one of the hose lengths includes an inflation valve (20). The hose length may be connected together in mutual alignment thus to produce a straight boom or with the interposition of elbows to form a curved boom capable of containing floating objects or substances.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AN INFLATABLE HOSE SYSTEM

THIS INVENTION concerns an inflatable hose system which may act as a boom for rescue purposes or for controlling the flow of surface borne contaminants of rivers, lakes and seas.

The system is particularly useful to fire services for example when rescuing personnel or animals trapped across a river or other body of water where a rescue device must be deployed rapidly, particularly when no boat is readily available.

It has been found that a flexible hose, such as a fire hose, if inflated to a pressure of 2 or 3 bar becomes rigid and can be directed across the surface of water without submerging.

It is an object of the present invention to provide an inflatable hose system which is lightweight and portable and can be readily deployed utilising several sections of hose coupled together in an airtight manner.

Thus, an inflatable hose system, according to the invention, comprises first and second hose lengths adapted to be detachably coupled together, and end-sealed thus to be

inflatable, and including an inflation valve connected to at least one of the first and second hose lengths.

Preferably, the system comprises two short lengths of hose each having one end flattened and sealed and at the other, one part of a two-part coupling whereby the two hose lengths may be coupled together with or without the interposition of one or more additional lengths of standard hose.

The inflation valve is preferably mounted in the wall of one of the hose lengths.

Preferably, each flattened and sealed end is plated and includes means for attachment thereto of a line or shackle.

Preferably, the flattened ends are sealed using a bonding agent and then vulcanised, a pair of opposed stainless steel plates being bolted together through the flattened and vulcanised hose end.

One or more of the couplings may have a butterfly or ball valve to enable the associated hose length to be sealed after inflation whereby the other hose length, and additional hose lengths, may be connected thereto when the hose length is inflated.

An embodiment of the invention, will now be described, by way of example only, with reference to the accompanying drawings, in which:-

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Fig. 1 is isometric view of an inflatable hose system constructed in accordance with the invention;

Fig. 2 is a cross-section through an inflation valve in one part of the system.

and Fig. 3 is an isometric view of an inflation unit for the system.

Referring now the drawings, the system comprises two short lengths 10 and 11 of typical fire hose each flattened at one end 12 and sealed as will be described prior to plating with opposed reinforcing plates 13 and 14 which may be of plastics, e.g. nylon, or an alloy or stainless steel and bolted together through the sealed and flattened end of the hose.

At the other end of each hose length is one part of a two-part coupling 15, 16. This is a standard coupling of the type which is watertight and, in this case, airtight up to a pressure of something in the region of 7 bar.

An inflation valve 20 is attached to the wall of hose length 10 and comprises an inner sleeve 21 and an outer sleeve 22 threadedly connected together, the inner sleeve having a spigot 23 which passes through an aperture in the hose wall. A clamping washer 24 is interposed between the inner and outer sleeves and has an annular protrusion 25 which together with a corresponding annular groove 26 in the inner sleeve 21 serve to trap the wall of the hose in such a manner that no leakage can occur. An elbow connector 27 is threadedly engaged within

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the bore of inner sleeve 21. The outer end of the elbow connector 27 includes a one-way pressure relief valve (not shown).

Thus, it will be seen, that by connecting together the two hose lengths 10 and 11 preferably with an appropriate length of standard hose between them and by inflating the entire assembly to a pressure of, for example, 3 bar, the hose becomes rigid and acts like a boom which can then be deployed across the surface of a body of water to provide access to a remote position across the water.

The provision of the flattened "chisel" end of the system ensures that the hose will ride across the surface of the water easily and rapidly without submerging.

If required, one or both parts of the coupling may include a butterfly or ball valve whereby it can be closed after inflation to enable additional lengths of hose to be added.

It will be seen that the plates 13 may have rope or shackle location eyes for attachment to an object to be projected or drawn across the water.

A boom created by adding lengths of hose to the inflatable hose system may be used for controlling the passage of floating contaminants such as oil, and may be located or suspended between the stantions of an arched bridge to catch objects or substances floating downstream.

The device has considerable rescue capabilities and, for example, in a fast flowing river it can be dropped into the water and held at one end on the near bank such that the other end will swing across the river to be anchored on the far bank.

By incorporating 45° or 90° elbow connectors, the system may be assembled to form an angular or generally curved boom, which may be a closed loop, thus to enclose objects or substances and prevent them from being swept away in any direction.

The flattened ends of the hose lengths are formed by the use of a bonding agent and then vulcanised for example at 25°C for a period of 10 minutes after which the flattened end may be drilled and plated as illustrated.

Referring now to Fig. 3 the system may be supplied with its own inflation unit 28 which may be preset and adapted to inflate the system to the anticipated suitable working pressure of 3 bar, and to permit safe deflation when required. The unit comprises a control valve 30 connected between an inlet assembly comprising a pressure regulator 31 and a pressure relief valve 32, and an outlet assembly comprising an outlet connector 33 preferably having a pressure gauge 34 connected by a pipe 35 to the outlet connector.

Typically, a gas cylinder of the type used by fire services for supplying air to breathing apparatus, is capable of inflating the system including eight lengths of 70mm hose each of 23 metres in length, and such a cylinder is adapted for attachment to the inlet assembly of the

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inflation unit by way of a bulkhead adaptor 36. The outlet connector 33 has a bulkhead adaptor 37 for connection to the inflation valve 20 of the inflatable hose system.

The inflation unit is conveniently contained within a housing 28, and the unit together with the pair of inflation hoses 10 and 11 are compact and easily stowed during storage and transportation.

In practice, an inflatable hose system in accordance with the invention will remain serviceable for 24 hours or more, depending upon the condition of the delivery hoses and the instantaneous couplings, and the assembly is easily topped up by reconnection to the inflation unit 28.

The control valve 30 in the inflation unit has an operational position which is selectable to effect safe deflation of the hose system when connected thereto.

With the inflation unit preset to deliver 3 bar pressure, the pressure relief valve is ideally set to operate if the pressure exceeds 3.5 bar.

It is a matter of appreciable convenience to fire services for an inflatable hose system of this kind to be compact and readily portable and it is envisaged that each hose length as illustrated in Fig. 1 need only be in the region of 30 to 60cm in length, the remainder of the system then being assembled using selected lengths of standard hose. This renders the entire system readily accommodated on a typical fire tender where space is at a premium.

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The invention is not limited to the details described herein. For example, the hose couplings may be arranged such that the lengths are other than aligned and may include, for example, T-shaped couplings to enable two or more booms to be fed from one inflation valve. Also, the inflation valve may be incorporated into the coupling instead of through the hose wall.

Many variations and attachments may be applied to the system according to the purpose for which it is required.

CLAIMS

1. An inflatable hose system comprising first and second hose lengths adapted to be detachably coupled together, and end-sealed thus to be inflatable, and including an inflation valve connected to at least one of the first and second hose lengths.
2. An inflatable hose system according to Claim 1, wherein at least one of the first and second hose lengths has one end flattened and sealed and, at an opposed end, has one part of a two-part coupling such that the two hose lengths may be coupled together with or without the interposition of one or more additional lengths of standard hose.
3. An inflatable hose system according to Claim 1 or Claim 2, wherein the inflation valve is mounted in the wall of one of the hose lengths.
4. An inflatable hose system according to Claim 2, wherein the or each flattened and sealed end includes a superimposed rigid plate and includes means for attachment thereto of a line or shackle.
5. An inflatable hose system according to Claim 2 or claim 4, wherein the or each flattened end is sealed with a bonding agent and is vulcanised, with a pair of opposed plates bolted together through the flattened and vulcanised hose end.

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6. An inflatable hose system according to Claim 2, wherein the or each coupling part includes a valve to enable the associated hose length to be sealed after inflation.
7. An inflatable hose system according to Claim 3, wherein the inflation valve comprises an inner sleeve and an outer sleeve threadedly connected together, the inner sleeve having a spigot which passes through an aperture in the hose wall, and a clamping washer being interposed between the inner and outer sleeves and having annular protrusions which serve to trap the wall of the hose between the inner and outer sleeves.
8. An inflatable hose system according to Claim 7, including an elbow connector threadedly engaged within the bore of the inner sleeve and including a one-way pressure relief valve.
9. An inflatable hose system according to any preceding claim, incorporating an angular elbow connector attachable between the respective hose lengths whereby the system may be assembled to form an angular or curved boom.
10. An inflatable hose system according to any preceding claim, including an inflation unit comprising a pressure regulator, a pressure relief valve and selectable valve means to permit deflation of the hose system.
11. An inflation unit according to Claim 9, wherein the pressure regulator is adapted to inflate the hose system to a pressure in the range of 2 to 3.5 bar.

12. A method of producing a floatable boom comprising the steps of providing first and second hose lengths each having one end sealed, detachably coupling the hose lengths together and inflating the coupled hose lengths to a pressure sufficient for them to become rigid such that they may be pushed from one end across the surface of water without submerging.
13. A method according to Claim 12, wherein the sealed end of at least one of the hose lengths is flattened to become chisel-shaped whereby the hose will ride across the surface of the water easily and rapidly without submerging.
14. A method according to Claim 12 or Claim 13, including the step of interposing one or more further lengths of open-ended hose between the first and second hose lengths thus to extend the length of the system.
15. A method according to Claim 14, wherein the or each further length of standard hose is attached to one of the first and second hose lengths after inflation thereof.
16. A method according to Claim 12, wherein at least one angular connector is attached between the respective hose lengths to form an angular or curved boom capable of containing floating objects or substances.

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17. A method according to any one of Claims 12 to 16, wherein the coupled hose lengths are inflated to a pressure in the range of 2 to 3.5 bar.

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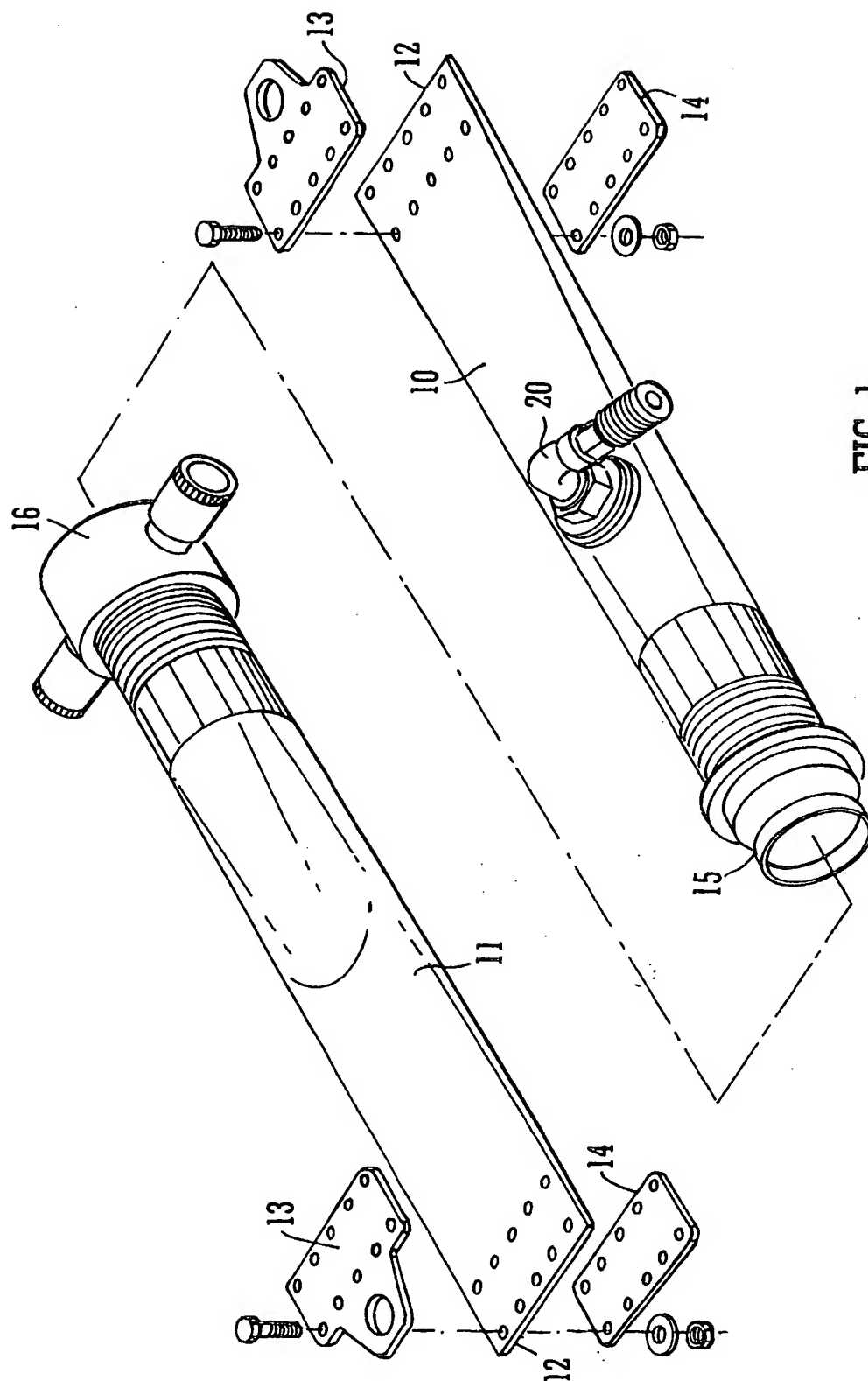


FIG. 1

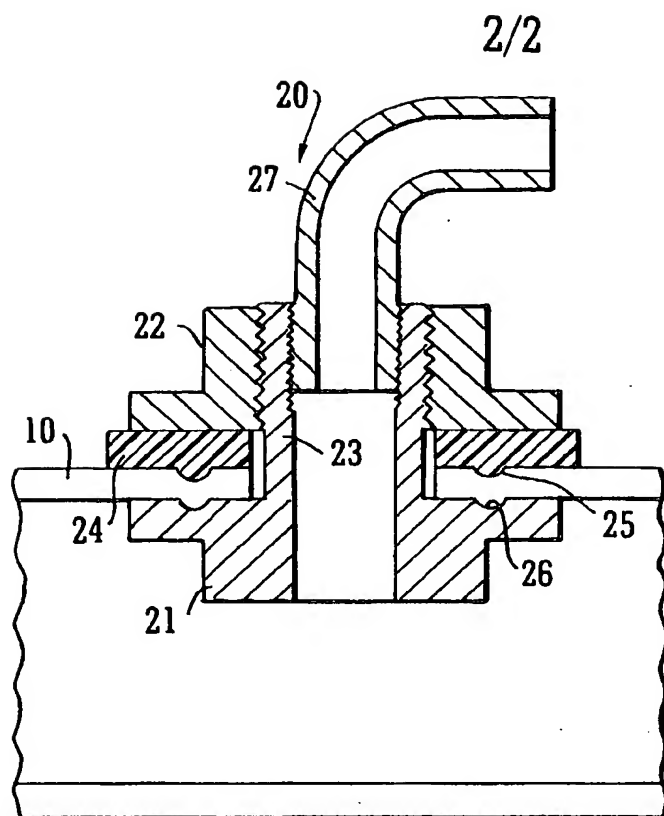


FIG. 2

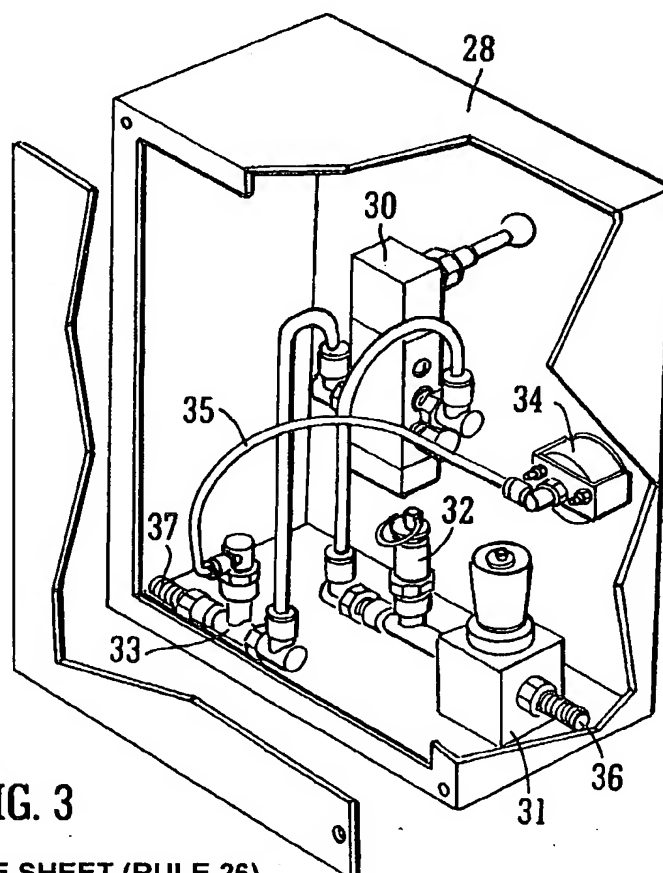


FIG. 3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 01/02555

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E02B15/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 197 821 A (CAIN RICHARD E ET AL) 30 March 1993 (1993-03-30) column 8, line 6 - line 38 figures 7,8	1-4, 12-15
X A	US 4 652 173 A (KALLESTAD JOHN) 24 March 1987 (1987-03-24) column 3, line 1 - line 6 column 3, line 31 - column 4, line 31 figures 2,3,8-10	1,2, 10-15 7,8
A	DE 21 36 619 A (WAGNER, HANS) 17 February 1972 (1972-02-17) figure 1 page 1, paragraph 2 - page 2, paragraph 2 -/--	2,6,14, 15

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 01/02555

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 43 13 438 A (FETZBERGER THOMAS) 10 February 1994 (1994-02-10) column 1, line 43 - line 64 figure 1 -----	5

INTERNATIONAL SEARCH REPORT

International Application No

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